

Amendments to the Claims:

1. (Cancelled)
2. (Previously Presented) The method as claimed in claim 10, wherein the nuclear medical technique includes SPECT or PET.
3. (Previously Presented) The method as claimed in claim 10, wherein the segmenting step is performed by an automatic segmentation routine.
4. (Previously Presented) The method as claimed in claim 10, wherein reconstructing the segmented first image data set is carried out by way of iterative backprojection.
5. (Previously Presented) The method as claimed in claim 4, wherein the iterative backprojection includes:
 - (a) numerically forming an iteration image data set from the calculated image,
 - 5 (b) determining a difference between the first image data set and the iteration image data set,
 - (c) adding the difference to the segmented first image; and
 - (d) iteratively repeating steps (a), (b), and (c) until at least one convergence criterion is satisfied.
6. (Previously Presented) A device for selective imaging of body structures, which device includes
 - first tomographic image data acquisition means for the acquisition of a first image data set,
 - 5 second tomographic image data acquisition means for the acquisition of a second image data set, which second tomographic image data acquisition means have a resolution which is higher than that of the first tomographic image data acquisition means,

backprojection means for image reconstruction of an image from the
10 first image data set, and
selection means for selecting, by means of the second image data set, a
portion of the first image data set to be reconstructed into a first tomographic image,
wherein the portion of the first image data set is situated in a selected image region
such that the backprojection means co-operate with the selection means in such a
15 manner that the first tomographic image is calculated exclusively from the portion of
the first image data set which are situated in the selected image region.

7. (Cancelled)

8. (Previously Presented) A method for selectively imaging
body structures, comprising the steps of:

using a first tomography method to acquire a first image data set from
a first spatial region;

5 using a second tomography method to acquire a second image data set,
the second tomography method having a higher resolution than the first tomography
method and the second image data set containing image data that at least partly
coincides in space with image data of the first image data set; and

reconstructing the second image data set into a second image;
10 segmenting the second image to define a selected image region;
segmenting the first image data set in accordance with the selected
image region segmented from the second image to define a segmented first image
data set;

reconstructing an image from the first image data set.

9. (Currently Amended) The method for selectively imaging
body structures, comprising the steps of:

using a first tomography method to acquire a first image data set;

using a second tomography method to acquire a second image data set,

5 the second tomography method having a higher resolution than the first tomography

method and the second image data set containing image data that at least partly coincides in space with image data of the first image data set; and

reconstructing an image from the first image data set;

wherein data from the first image data set used in the reconstructing

10 step is selected using the second image data set;

wherein the reconstructing step further comprises the steps of:

selecting a region to be imaged from at least one region

represented in the second image data set; and

calculating the image reconstruction from image data in

15 a region represented in the first image data set that corresponds to the selected region represented in the second image data set.

10. (Currently Amended) A method of selecting imaging body structures comprising:

acquiring a first image data set from a first spatial region with a tomographic nuclear medical imaging technique;

5 acquiring a second image data set from a second spatial region with a second tomographic imaging technique, the first and second spatial regions coinciding at least partially in space;

reconstructing the second image data set into a second image;

segmenting the second image to define a segmented second image;

10 forward projecting the segmented second image to form a segmented second image data set;

associating the segmented second image data set with the first image data set to form a segmented first image data set;

15 reconstructing the segmented first image data set into a segmented first image.

11. (Previously Presented) The method as claimed in claim 5, wherein the convergence criteria includes the difference dropping below a predetermined convergence value.

12. (Previously Presented) The method according to claim 10,
further including:

reconstructing the first image data set into a first image;

- 5 registering the at least one of: (1) the first and second images and
(2) the first and second image data sets.

13. (Previously Presented) The device as claimed in claim 6,
wherein the selecting means includes:

- an automatic segmenting means which segments a second image
reconstructed from the second image data set, the selected portion of the first image
5 data corresponding to the segmented region of the second image.

14. (Previously Presented) The device as claimed in claim 6,
further including:

registration means for registering the first image data set and the
second image data set.